A WORD FROM THE PUBLISHER Well, here is issue number two of this Volume - very late. I shan't bore you with the reasons for the delay. Suffice it to say that I have edited this issue, and request that all submissions for future issues be sent to me.

NEW CARTRIDGES ARE HERE!!! When the Astrocade balloon collapsed, there were a number of programs in various stages of development. Some of these have been completed and one of our subscribers has obtained the software so that cartridges can be created. These listed are now available, with their prices:

SOCCER	29.95
BOWLING	29.95
CHECKERS	19.95
CONAN	29.95
MUSIC MAKER	44.95

There is a review of SOCCER on page 25. The MUSIC MAKER cartridge includes the extra hardware and circuitry to provide a cassette jack interface, just like the BASIC has. This way you can save your musical selections and compositions on tape for further work or enjoyment.

In addition to the above, here are some more programs on cartridge that are now available:

MAZEMAN	29.95
SONGS (by Moses)	19.95
VIDEO STORY BOOK	29.95
MISSILE ATTACK	29.95
LIFE	19.95
PACMAN / MUNCHER	29.95

All of the above can be obtained from the following dealers:
ABC HOBBYCRAFT 2155 E. Morgan St.,Evansville, IN, 47711
RGB ELECTRONICS 4906 Willshire Ave., Baltimore, MD, 21206
MIKE WHITE SOFTWARE 4585 County Line Rd., R.D. #1, Box 373, Wakeman, OH, 44889

Please add $1.50 for the first cartridge and .50 for each additional one, for postage, and allow two weeks for delivery.

ASTROCADE MOTHER BOARDS are available from ABC HOBBYCRAFT and also from Fair Radio Sales, P.O. Box 1105, Lima, OH, 45802. The photo in the Fair sales sheet seems to show empty slots where the custom chips go, but all the other parts seem to be there. They also say 'new'. Their part number is MI-90701-B620. Price is $6.95 plus shipping for 2#.

TV MODULATORS We have a couple of these here at a sale price of $12 ppd.

ARTILLERY DUEL was one of the most popular games for those who were fortunate enough to have purchased one before the stocks ran out. Well, we found a box of them, and they are being offerred to ARCADIAN subscribers first, at the old close-out price of $27 ppd. They are available from this address only.

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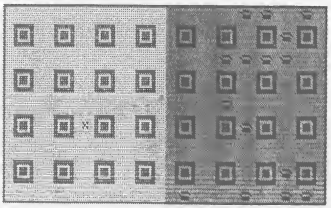
TREASURE

HUNT



LOWERCASE WORDS ARE 1-BYTE KEYPAD WORDS. UNDERSCORES ARE SPACES.

```
[S2=52]

TREASURE HUNT
BY TIM WHITE AND MIKE KINKEAD

4 L=0:O=1:M=1
5 VR=3:VB=15:TB=50:U=0:R=0
10 L=L+1:K=-60:clear :A=-70:B=30:&(9)=20
11 FC=96:BC=90:&(0)=224:&(1)=224:&(2)=218:&(3)=218:box 0,0,160,88,1:box 0,0,158,
86,3
20 MO=MO+10:box A,B,10,10,1:box A,B,6,6,3:box A,B,4,4,3:A=A+20
25 if A>70B=B-20:A=-70
30 if B<-35goto 40
35 goto 20
40 ↓:for A=1to L
45 box 0,0,2,88,3:Z=rnd (7)x10-80:Y=rnd (10)x10-60:if Y<-40Y=-40
46 if PX(Z,Y)goto 45
47 if PX(Z-1,Y-1)goto 45
48 box Z,Y,4,4,1:box Z,Y,6,1,3:C=70:D=0:G=-70:H=0:next A
49 A=0:for A=1to L
50 J=rnd (7)x10:K=rnd (10)x10-60:if K<-40K=-40
51 if PX(J,K)goto 50
52 if PX(J-1,K-1)goto 50
55 box J,K,4,4,1:box J,K,6,1,3:next A
60 NT=-1:&(22)=200:&(19)=200:&(18)=22:&(20)=110:&(16)=175
67 C=C+JX(2)x10:D=D+JY(2)x10:G=G+JX(1)x10:H=H+JY(1)x10
68 if C<10C=10
69 if D>40D=40
75 if C>70C=70
80 if D<-40D=-40
90 if G<-70G=-70
100 if G>-10G=-10
110 if H<-40H=-40
120 if H>40H=40
900 box C,D,6,6,3
901 if PX(C+1,D)=0goto 2000
905 if PX(C,D-1)=0goto 3010
906 if PX(C,D)=00=O+1:goto 5000
```

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```
910 box C,D,6,6,3
920 box G,H,6,6,3
921 if PX(G+1,H)=0goto 2010
922 if PX(G,H-1)=0goto 3000
923 box G,H,6,6,3
924 if PX(G,H)M=M+1:goto 5000
928 goto 60
2000 NT=0:for I=1to 10:box C,D,1,1,3:NV=K:NM=3:VC=K÷17x(K)70):VA=VC:VB=VC:K=K-30
:next I:↓
2001 box C,D,10,10,1:box C,D,6,6,3:box C,D,4,4,3:C=70:D=0:goto 60
2010 NT=0:for I=1to 10:box C,D,1,1,3:NV=K:NM=3:VC=K÷17x(K)70):VA=VC:VB=VC:K=K-30
:next I:↓
2011 box G,H,10,10,1:box G,H,6,6,3:box G,H,4,4,3:G=-70:H=0:goto 60
3000 &(16)=22:&(17)=33:NM=0:NT=-1:&(18)=10:&(22)=66
3001 NT=0:box G,H,6,6,2
3005 U=U+1:if U=Lgoto 3925
3006 goto 900
3010 &(16)=22:&(17)=33:NM=0:NT=-1:&(18)=10:&(22)=66
3011 NT=0:box C,D,6,6,2
3012 R=R+1:if R=Lgoto 4925
3013 goto 900
3925 P=rnd (7)x10-80:Q=rnd (10)x10-60:if Q<-40Q=-40
3926 S=P:T=Q:if PX(S,T)=1goto 3925
3927 box S,T,3,3,1:box S,T,1,3,3:box S,T,3,1,3:A=S:B=T
4010 NT=0:goto 60
4925 P=rnd (6)x10+10:Q=rnd (10)x10-60:if Q<-40Q=-40
4926 S=P:T=Q:if PX(S,T)=1goto 4925
4927 box S,T,3,3,1:box S,T,1,3,3:box S,T,3,1,3:A=S:B=T
4928 NT=0:goto 60
4950 CY=0
5000 NT=0:MO=20:VA=15:TA=25:NM=0:VP=1:clear :CY=0:print "_PLAYER__1";print M-1:C
Y=0:CX=10:print "PLAYER__2":CX=1:print O-1
5001 if L>14print "_________GAME_OVER":↓:goto 5020
5010 for A=1to 500:next A:goto 5
5015 if TR(1)goto 4
5020 goto 5015

ENTER>print ":run ":clear :CX=-24:CY=10:print "TREASURE":CX=-12:CY=-10:print "HU
NT"::print %(16384),1887[REC]
```

SILLY-FACE
BY MIKE WHITE

Blue Ram Basic

```
>10 CLEAR :FOR A=27TO 30:CIRCLE 0,12,A,6:NEXT A:BOX 0,32,160,40,4:
FOR B=-15TO 15STEP 30:FOR A=7TO 9:CIRCLE B,20,A,5:NEXT A:BOX B,20,3,3,7:
NEXT B:DATA CX,-33,-32,6,8,L,:PRINT "HAPPINESS IS
>20 FOR A=37TO 40:CIRCLE 0,12,A,5:NEXT A:BOX 0,18,9,9,7:DATA CX,-57,-40,7:
PRINT "A BLUE RAM SYSTEM!!!",:IF KPRUN
```


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```
><><<   TRICKS OF THE TRADE    ><><<
><><><><<  A TUTORIAL BY    ><><><><<
><><><><<    MIKE WHITE     ><><><><<
><><><><<  COUNTY LINE #2   ><><><><<
><><><><<  R.D.#1 BOX 373   ><><><><<
><><><><<  WAKEMAN , OHIO   ><><><><<
><><><><<       44889       ><><><><<
```

THIS NEW AND CONTINOUSLY RUNNING (I HOPE) COLUNM IS FOR ALL LEVELS. BUT AIMED AT NEW POTENTIAL SOFTWARE PRODUCERS. HOWEVER YOU "OLD TIMERS" OUT THERE HAVE A LOT TO GAIN AS WELL AS THE RAW BEGINNER.

NOW I'M NOT OUT TO SPOIL ANYONE'S SOFTWARE BUSINESS. IN FACT IF YOU WANT A JUMP ON THIS COLUMN I RECOMMEND THESE SOFTWARE ITEMS: PACK RAT. MONKEY JUMP.AND DUNGEONS OF DRACULA [BY MIKE PEACE OF WAVEMAKERS]. NAUTILUS [BY BILL LOOSE OF L+M SOFTWARE]. THE GREAT AMERICAN JIGSAW [BY ESOTERICA LTD.] (IF AVAILABLE). OTHERS THAT I WILL MENTION LATER (SOME NO LONGER AVAILABLE). AND QUADRA (OF COURSE) [BY ME].

ALSO PRINTED LATELY WAS "REPACK". THE SECRETS HERE LIE IN THE FACT THAT ASTRO "UNPACKS" EACH LINE INTO THE LINE INPUT BUFFER BEFORE EXECUTION. LINES #40. 80. AND 90. EXECUTE WHILE THE UTILITY "STEPS OUT" OF MEMORY (SO TO SPEAK). HALTING DURING UNPACK OR REPACK CYCLES CAUSES A PROGRAM CRASH. HOW CAN IT WORK IF IT STEPS OUT YOU ASK? THE LOOPS MUST RETURN THE UTILITY TO MEMORY BEFORE ASTRO "UNPACKS" ANOTHER LINE (AT THE END OF THE CURRENT LINE). FOR N=CTO LSTEP 2:ETC. RETURNS "REPACK" TO MEMORY (LINE 30 SAVES THE UTILITY TO BEGIN WITH). USING ASTRO'S OWN BUILT IN "PACKING AND UNPACKING" ROUTINE WE CAN EITHER USE A LOOP. OR TAPE FROM -24576TO -22771 AND PREFORM THE FEAT.

IF ANY OF MY PROGRAMS PUZZLE YOU. DON'T HESITATE TO WRITE. A S.A.S.E. SPEEDS UP REPLYS.

NOW ON TO OUR "CLIFF HANGER" FOR THIS MONTH. IN LESSON #1 OF THE ASTRO BASIC HANDBOOK YOU SAW THIS:

```
10 FOR A=1TO 12
20 PRINT A
30 NEXT A
```

WE ALL KNOW WHAT THIS DOES RIGHT? DID YOU EVER TRY:

```
10 FOR A=1TO 12
20 NEXT A
30 PRINT A
```

WHAT WILL IT PRINT? A 12? SO SOME THINK! NOT 12? WHAT THEN? RUN IT AND SEE' WHY? THAT IS NEXT MONTH'S LESSON.

"FOR NEXT LOOPS AND DJNZ RELATIONSHIPS"
ANY CLUES? YES! REREAD LESSON #1 ASTRO BASIC HANDBOOK
HINTS? ONE! TRY CHANGING THE STEP AROUND' KEEP BUGGIN'

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BEFORE RETURNING TO FOR NEXT LOOPS, I WANT TO EXPLAIN THIS MONTHS PROGRAM SOMEWHAT. HERE IS A REPRINT OF "FILE SEARCHER EB"

```
ENTER>DE.:CLEAR
1 :INPUT
10 CLEAR :DATA BC.7,165,91,0:DATA NT.0,-25,8,6:PRINT "ST0P TAPE
20 NT=3:FOR G=0TO 50:MU=RND (26)+64:NEXT G:CLEAR :FOR G=1TO
%(27808)c10-8:PRINT #3,G,:GOSUB 80
30 NEXT G:CC=5:PRINT "Y0UR CH0ICE?
40 G=KP-48:IF (G<1)+(G)%(27808)c10-8)GOTO 40
50 CLEAR :DATA CX.-29,8,6:PRINT "START TAPE":NT=0
60 :INPUT W:CLEAR :CY=12:IF Y=G CC=6:CX=-17:PRINT "L0ADING":
GOSUB 80:RUN
70 CC=5:CX=-35:PRINT "SEARCHING F0R":GOSUB 80:FOR D=WTO X:NEXT D
:FOR D=WTO X:NEXT D:GOTO 60
80 IF G=1CX=-(# OF LETTERS+SPACES)b3+1:PRINT "PROG. TITLE
90 IF G=2 ETC.
(LAST LINE NO.) RETURN
ENTER>PRINT ":GOTO 10":PRINT %(24676).1690
```

THE SET UP IN LINE #1 IS BECAUSE UNLIKE AB, EB EXECUTES INSTRUCTIONS WHERE THEY LIE. WE NEED TO SET UP A STARTING POINT SO THE COMPUTER DOSEN'T GET LOST. USING LINE #1 IN AB WILL WORK. IN FACT, YOU HAVE THE ADVANTAGE OF SETTING UP THE LINE INPUT BUFFER OF YOUR "SLAVE" PROGRAMS. TAPE THOSE AB PROGRAMS:

```
ENTER>PRINT ":&(0)=170:&(1)=170:&(2)=7:&(3)=7:&(9)=20:RUN ":
:PRINT %(16384).1937
```

(THIS EXAMPLE TAPES "GOLF" PG.46 VOL.3 ARCADIAN). IN EB YOUR SLAVE PROGRAMS WILL HAVE TO START WITH:

```
1 ..
```

TAPE THEM BY FIRST TIMING A :PRINT (OF THE ENTIRE DUMP) NEXT ENTER THIS LINE TEMPORARILY AND FIND VALUES FOR W+X THAT GIVE A DELAY A LITTLE LONGER THAN YOUR DUMP ROUTINE TOOK.

```
30000 FOR Z=WTO X:NEXT Z:FOR Z=WTO X:NEXT Z
```

THEN TAPE WITH:

```
ENTER>:PRINT W.3:DA.W.(YOUR #'S):PRINT (YOUR DUMP ROUTINE)
```

THE PUZZLING PART OF THIS PROGRAM IS THE PART DON GLADDEN DID NOT PRINT IN THE ARCADIAN. %(20111). PUT AB IN THE SLOT AND RESET. ENTER>PRINT %(20111). NOW ENTER [WORDS] [GO]. WHAT LINE # ARE YOU AT? ENTER:

```
10PRINT "YOUR NAME
```

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NOW >PRINT %(20111). WHAT DID YOU GET NOW? RESET AND ENTER>%(20111)=9990. NOW ENTER [WORDS] [GO]. WHAT LINE # ARE YOU AT NOW? ARE YOU NOW FAMILIAR WITH THE +10 ADVANCE REGISTER? IN OLD BB IT WAS AT %(20068). %(-32608) IN VIPER-SOFT. AND %(27808) IN BLUE RAM BASIC. THIS SETS THE LOOPS AUTOMATICALLY IF A CHANGE IS MADE TO THE MENU. (NEW ADDITION PERHAPS). JUST ENTER: (LAST LINE #) [PAUSE] [PAUSE]. JUST BEFORE TAPING. DONT FORGET!

IF ANY OF MY PROGRAMS PUZZLE YOU, DON'T HESITATE TO WRITE. A S.A.S.E. SPEEDS UP REPLYS. NOW ON TO:

FOR NEXT LOOPS AND DJNZ

DID YOU FIGURE THAT LOOP OUT FROM LAST MONTH? ON PAGE 21 OF THE ASTRO BASIC INSTRUCTION MANUAL YOU WILL READ:

"THE WORD NEXT IN LINE 30 MEANS ADD 1 TO A AND LOOP BACK TO THE WORD FOR."

NOT "HE WILL GO BACK TO LINE #20. ADD ONE TO 'A', AND REPEAT THE PROCESS. (LOOP). UNTIL 'A' IS MORE THAN FIVE.", AS DON GLADDEN SAID ON PG.69 VOL.5 ARCADIAN. NOW I.M NOT SAYING THAT DON'S TUTORIALS IN VOL.5 WERE MISLEADING. IN FACT THIS IS THE ONLY TIME THAT A TECHNICAL MISTAKE WAS MADE! IF YOU HAVEN'T GOT VOL.5 GET IT! DON'S (AND OTHERS) WRITINGS ARE INVALUBLE! WHY DID THE LOOP OVERRUN A 13? YOU ASK? WHEN BASIC WAS WRITTEN THE "WIZZARDS" IN THE BUSINESS DECIDED TO GIVE US A LOOP INSTRUCTION THAT RESEMBLES DJNZ! WHAT'S DJNZ??? YOU ARE WONDERING. DJNZ IS THE ASSEMBLY LANGUAGE MNEMONIC FOR A MACHINE CODE INSTRUCTION USED FOR LOOPS. DJNZ STANDS FOR "DECREMENT AND JUMP IF NOT ZERO" THE B REGISTER INSIDE THE Z80 (NOT BASIC VARIABLE B). IS PRESET. THEN WHEN THE DJNZ IS ENCOUNTERED B IS DECREMENTED BY ONE THEN TESTED. IF B=0 THE NEXT INSTRUCTION IS EXECUTED. IF NOT. THE OFFSET VALUE (IMMEDIATELY FOLLOWING THE DJNZ) IS ADDED TO THE PROGRAM COUNTER. CAUSING A JUMP TO OCCUR. + A LOOP TO BE FORMED. NOTICE THAT THE "NEXT" IN BASIC DOES THE SAME. THE VARIABLE IS ADDED TO THE "STEP", THEN IT IS TESTED TO SEE IF IT HAS PAST THE END OF THE LOOP. IF YOU TRIED CHANGING THE "STEP" AROUND YOU WOULD HAVE FOUND THAT THE VARIABLE STOPED ONE "STEP" OVER THE END. NOW, I'LL GIVE YOU SOMETHING TO HOLD YOU TILL NEXT MONTH.

ON PG.103 VOL.4 ARCADIAN I READ (CONCERNING GOTO AND GOSUB). "THE COMPUTER GOES BACK TO THE BEGINNING AND SEARCHES FOR THE NEW LINE NUMBER.-SHOULD BE NEAR THE BEGINNING TO SAVE TIME." FOR NEXT LOOPS HAVE NO SUCH HANGUPS AND CONSEQUENTLY RUN FASTER. BUT ,CAN YOU WRITE A FOR NEXT LOOP THAT WON'T END? IT HAS BEEN DONE. SEE MONKEY JUMP OR QUADRA! ANSWERS NEXT MONTH. KEEP BUGGIN'!

FOR NEXT LOOP LOCKING:

IS WHAT I CALL A METHOD OF TIEING UP A VARIABLE SO AS TO CAUSE A FOR NEXT LOOP TO RUN (POSSIBLY) FOREVER. I TOLD YOU LAST MONTH WHY YOU MAY WANT TO DO SO. ALSO, I SAID TO LOOK INTO "MONKEY JUMP". OR "QUADRA". IN "MONKEY JUMP" YOU WILL FIND THIS:

```
110 FOR F=1TO 4STEP 0:IF E=38E=0:GOTO 230
```


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DID YOU GUESS IT WAS THIS EASY? IN "U.F.O. ATTACK" (PART OF "QUADRA"). YOU CAN FIND THESE LINES: (BETWEEN OTHERS)

```
37 FOR R=MTO Q:GOSUB 6:IF W<0BOX Z,-39,1,3,1:IF TR(U)GOSUB 6:C=Z
:W=0:GOTO 11

40 IF L=1IF N<2R=R-1:Y=Y+F:GOSUB 8:IF V=4Y=Y-5
```

THE LOOP IN LINE 37 DEFAULTS TO STEP 1. THE "R=R-1" IN LINE 40 LOCKS THE LOOP. THIS CAUSES THE FLYING SAUCERS TO STOP WHILE ONE LITTLE GUY COMES ACCROSS. GUNS BLAZING, LIKE "GALAXIAN". THE LOOP NORMALLY MOVES THE U.F.O.'S "SPACE INVADER" STYLE. (ONE AT A TIME). IF YOU TRY CHANGING THE "TO" OR "STEP" VALUE AFTER THE LOOP STARTS, YOU ARE IN FOR A DISAPPOINTMENT. THESE VALUES ARE "PUSHED" ONTO THE "STACK" AND ARE QUITE UNTOUCHABLE. TRY:

```
10 FOR A=0TO BSTEP C
20 B=5:C=1
30 PRINT A
40 NEXT A
ENTER>B=100:C=10:RUN
```

THE EXPRESSION "ENTER>" MEANS ENTER WITHOUT A LINE # AND EXECUTE IMMEDIATELY. YOU WILL FIND THAT THE VALUES DON'T CHANGE AND RND # S CAN BE PUT IN DIRECTLY AS WELL AS USING B OR C IN THE LOOP FOR ANYTHING ELSE. SEE LINE 90 OF "CROSSING SIGNAL". THIS MONTH'S PROGRAM.

"CROSSING SIGNAL" IS A DEMONSTRATOR OF "SCREEN TAPING" AND "AUTO RUN". THE PROGRAM OPERATES ON THE PRINCIPLE THAT &(9) CAN BE MOVED INSIDE A LOOP. THE TITLE TO "THE SECRET OF PELLUCITAR". (WHICH HAD RAVE REVIEWS) DID THE SAME TRICK. THE PROGRAM ENDS AT LINE #110. AND BEYOND IS A TAPE COPY ROUTINE. NOTICE THE SCREEN IS ASSEMBLED AND TAPED GRAPHICS SHOWING. ALSO. IT "AUTO RUNS"!!!

THE "SECRET" BEHIND "AUTO RUN", IS THAT THE MICROPROSSER, THE Z80,THE BRAIN OF THE MACHINE (IF YOU WILL), KEEPS TRACK OF WHERE IT'S AT IN A BASIC PROGRAM WITH ITS OWN DE REGISTER. SO, DE STOPS AT THE WORD "INPUT" WHEN WE LOAD A TAPE. TO GENERATE AUTO RUN WE MUST FUDGE IN ":RUN" SO THAT THE ARCADE "THINKS" IT SEES ":INPUT :RUN ". USING ":PRINT %(16384),1887" TAPES JUST TO THE WORD "RUN ". NORMAL :PRINT STOPS SHORT OF THE LINE INPUT BUFFER, AND THEREFORE CANNOT BE USED. ON PAGE 103 ASTRO BASIC HANDBOOK IT SAYS THAT THE LINE INPUT BUFFER STARTS AT %(20154). LEAVING TWO BYTES FOR THE :INPUT MAKES %(20156). ON PAGE 98 SAME BOOK, YOU SEE THE CODE FOR ":" IS 59 (TRY TV=59), AND FOR "RUN" IT'S 106 (TRY TV=106). TO GET THE RIGHT ORDER WE MUST MULTIPLY THE SECOND ENTRY (THE "RUN") BY 256. THAT GIVES 106x256+59=27195 WHEN THE SCREEN IS IN PLACE, AS IT IS WHEN WE TAPE THIS MONTH'S PROGRAM. IT'S EASIER TO USE THIS ONE POKE. OTHERWISE USE:

```
ENTER>PRINT ":RUN ":PRINT %(16384),1887
```


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THIS HAS THE ADDED BENIFIT OF ALLOWING USE OF THE BUFFER FROM TAPE. SEE WHAT WE DID TO "GOLF" LAST MONTH IN THIS COLUMN. YOU MAY EVEN START YOUR PROGRAMS OUT IN THE MIDDLE WITH A GOTO AND THIS AUTO RUN. THE BRB QUADRA DOES!!

TO ALLOW SUCH TAPINGS TO BE FILE SEARCHED YOU MUST USE THE MODIFIED FILE SEARCHER SUGGESTED LAST MONTH. YOU DON'T HAVE TO :INPUT W,3 HOWEVER, THAT WAS SO DIFFERENT LENGTH PROGRAMS COULD BE FILED. "FOR D=0TO 11000:NEXT D" DOES IT ALL FOR AB. IF YOU WANT TO USE THE LINE INPUT BUFFER FROM TAPE IN BRB, AND NOT START YOUR SLAVE PROGRAMS OUT WITH "1 ..", ADD LINE 5:

```
5 .ABCD
```

AND CHANGE LINES 1,30,AND 60, TO:

```
1 ..:INPUT :RUN
30 NEXT G:DATA A,>1,>5+1,27948,C:FOR E=ATO BSTEP 2:%(D)=%(E):
D=D+2:NEXT E:CC=5:PRINT "Y0UR CH0ICE?
60 :INPUT W:CLEAR :CY=12:IF Y=G CC=6:CX=-17:PRINT "L0ADING":
GOSUB 80:%(C)=8224:CALLB
```

AND TAPE USING:

```
ENTER>PRINT ";RUN ";%(>5+1)=11537:%(>5+3)=-13971:
:PRINT %(24576),1688 [REC]
```

WHEN YOU SEE [REC] IN ANY OF MY PROGRAMS IT MEANS START TAPE RECORDING THEN PRESS GO. IF ANY OF MY PROGRAMS PUZZLE YOU, DON'T HESITATE TO WRITE. A S.A.S.E. SPEEDS UP REPLYS.

THESE CHANGES WERE ORIGIONALLY WRITTEN TO TAPE BRB 4K SCREEN AND TEXT SIMULTANEOUSLY. THE ATTEMPT FAILED, BUT LEFT THE "LINE INPUT BUFFER CALLBACK ROUTINE" (AS I CALL IT) IN ITS WAKE!

WHEN THE PROGRAM "AUTO RUNS" IT SEES THE PERIODS IN LINES #1+5, IGNORING THOSE LINES. WHEN IT GETS TO ALTERED LINE #30, IT SETS 3 VARIABLES, THEN MOVES THE CONTENTS OF LINE #1 TO THE LINE INPUT BUFFER BY PEEK AND POKE, (SAME WAY "REPACK" MOVED THE TEXT TO PACK AND UNPACK). WHEN THE CORRECT PROGRAM IS FOUND, (IN LINE #60), TWO SPACES ARE POKED INTO THE FIRST TWO BYTES OF THE LINE INPUT BUFFER (256x32+32=8224). "TV=32" GIVES A SPACE. (SEE PAGE 98 ASTRO BASIC HANDBOOK). I'M NOT SURE EXACTLY WHY THIS HAS TO BE "SPACE SPACE SEMICOLON", BUT BELIEVE ME, IT WORKS THIS WAY. TO GET THE COMPUTER BACK INTO THE LINE INPUT BUFFER REQUIRES MACHINE CODE. YOU CAN'T DO IT FROM BASIC, EVEN BRB! WHEN WE TAPE THE PROGRAM, WE POKE A VERY SHORT ROUTINE INTO LINE #5, AND CALL IT FROM THE END OF LINE 60. THE MACH CODE PART IS:

```
LIBCBR.LD.DE.27949  ;FUDGES A NEW DE VALUE
      .RET.         ;RETURNS TO BASIC INSIDE LINE INPUT BUFFER
```


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REMEMBER THAT THE DE REGISTER (INSIDE THE Z80) IS THE BASIC TEXT PROGRAM POINTER. LIBCBR IS A LABEL , MEANING "LINE INPUT BUFFER CALLBACK ROUTINE". ",LD,DE,27949" IN ASSEMBLY LANGUAGE MEANS LOAD DE WITH 27949, (ADDRESS OF 2ND BYTE OF LINE BUFFER). ",RET." IN ASSEMBLY CODE MEANS RETURN (TO BASIC). AT THE PLACE THE DE REGISTER NOW INDICATES!! WELCOME TO THE WONDERFULL NEW WORLD OF MACHINE LANGUAGE! TO GENERATE THE TWO POKES I USED "THE ASSEMBLER" [FROM GENERAL VIDEO]. A MUST PURCHASE! ALL EB USERS!!

BE SURE TO LEAVE 5 BYTES AHEAD OF THE SEMICOLON ON YOUR SLAVE PROGRAMS. LIKE THIS:

```
ENTER>PRINT "    ;RUN ":PRINT W,3:;PRINT %(24576),1766
```

3 SPACES ARE ADDED TO THE QUOTE. ALSO "1766" TAPES THE ENTIRE LINE INPUT BUFFER. (IN BRB)

TO STOP "AUTO RUN" ENTER>CLEAR ;PRINT ;:INPUT

AND PLAY THE TAPE. THIS DISPLACES THE DE REGISTER AND ALLOWS YOU TO LIST THE PROGRAM AND LEARN ITS CONTENTS. DON'T USE THIS TO PIRATE TAPES! THOSE COPYRIGHTS THEY PRINT ARE LEGAL IN COURT EVEN WITHOUT EVER BEING REGISTERED. TO COPY GAURD A TAPE (IN AB)

```
ENTER>PRINT ";:RUN ";%(20120)=199:;PRINT %(16384),1937:
%(20120)=3779 [REC]
```

MOST PURCHASED SOFTWARE IS LISTABLE, HOWEVER. IF WE COULD ONLY UNDERSTAND THE LISTINGS!! TRY THIS: (IN EB ONLY)

```
10CLEAR ;XY=0:FOR A=0TO 100:LINE RND (160)-81,RND (88)-45,3;@(A)
=XY:NEXT A:XY=0:FOR A=0TO 100:LINE @(A),B.(@(A),1),3:NEXT A:RUN
```

CAN YOU DO THIS IN AB? SEE NAUTILUS [BY L+M], OR CHANGE THE "BYTE (@(A),UPPER)" TO "@(A)÷256-(RM#0)x(@(A)<0)", OR SEE PG. 59 VOL. 5 ARCADIAN. HOW? WITH THAT? NEXT MONTH! KEEP BUGGIN'!!

NAUTILUS [L+M SOFTWARE] HAS A VERY INTERESTING TITLE PROGRAM WHICH SEES A SUBMARINE EXPLODE WITH RANDOM LINES AND THEN THESE LINES DISSAPPEAR LEAVING THE SUB WITHOUT A SCRATCH! HERE ARE THE TWO LINES RESPONSIBLE FOR THIS (THOUGHT TO BE IMPOSSIBLE) FEAT:

```
6 FOR A=1TO 20:FC=114:NM=3:NV=255:LINE 24+RND (2xH)-H,-40+H-RND
(Hx2),4=XY:¥(A)=XY:FC=7:LINE 24,-40,3:↓:NEXT A
7 FOR A=1TO 20:FC=114:NM=3:NV=255:XY=¥(A):LINE 24,-40,3:FC=7:↓:
NEXT A:FC=8:BC=238:&(10)=154:&(9)=-1:&(15)=0
```

IGNORING THE COLOR CHANGES, SOUND ENHANCEMENTS, AND THE PORT COMMANDS (AT THE END), YOU GET BASICALLY:

```
10 FOR A=1TO 20:LINE RND (150)-51,35-RND (150),0:¥(A)=XY:LINE 24
,-40,3:NEXT A:FOR A=1TO 20:XY=¥(A):LINE 24,-40,3:NEXT A
```


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IN THE FIRST LOOPS, H=75. IN THESE LAST LOOPS YOU CAN SEE WHAT DOES THE RANDOM LINE ERASE. AN INVISIBLE LINE IS DRAWN TO A RANDOM LOCATION. THE VARIABLE XY IS STORED, AND A VISIBLE LINE IS DRAWN TO THE SUBMARINE. THE SECOND LOOP MOVES VARIABLE XY TO THE STRINGED LOCATION WHERE OUR VISIBLE LINE STARTS, THEN IT REDRAWS THE LINE TO THE SUB USING XOR (REVERSE LINES). ON PG.109 ASTRO BASIC HANDBOOK IT TELLS US "EACH LINE IS DRAWN BEGINNING AT THE END POINT OF THE MOST RECENT LINE DRAWN. THE LOCATION OF THIS END POINT IS STORED IN THE TWO LETTER VARIABLE XY". MEANING THAT WHEN A LINE IS DRAWN IT DRAWS FROM THE LOCATION IN XY TO THE LOCATION SPECIFIED IN THE LINE COMMAND, THEN BALLY UPDATES VARIABLE XY. IF WE DRAW AND REDRAW THE SAME REVERSE (XOR) LINE WE WIND UP WITH THE ORIGINAL PICTURE REGARDLESS OF WHAT IT MAY HAVE BEEN. THE PROBLEM (UP TO NOW) HAS BEEN HOW TO REDRAW A LINE FROM THE STRUNG XY. ON PG.110 AB HANDBOOK IT SAYS "THE Y VALUE OCCUPIES THE HIGH ORDER BYTE OF THIS WORD, X THE LOWER BYTE". WE MUST PERFORM A "BYTE SPLIT" TO FILL A LINE COMMAND WITH THIS NO. THESE THREE LINES OF PACK RAT [WAVEMAKERS] SHOW US SOMETHING:

```
405GOSUB 60;&(17)=129:FOR A=840TO 255STEP -8
406BOX A,-2,8,8,3:BOX A+8,-2,8,8,2:BOX A-24,-2,6,6,3:BOX A-16,-2
,6,6,2:&(21)=A:&(23)=A
410NEXT A:&(16)=19:GOTO 15
```

NOTICE THE "A" VARIABLE IN THE BOXES IS OVER 255. THIS MEANS THAT BALLY IGNORES THE HIGH ORDER BYTE BETWEEN COMMAS IN BASIC!!

THE X PART IS DONE FOR US THEN. THE Y PART IS DONE ONE OF 3 WAYS. USING THE BYTE COMMAND (AS I DID LAST MONTH), DIVIDING BY 256 (WHICH GETS MESSY), OR USE VOL.5 PG.59 ARCADIAN. HERE ARE:

RANDOM LINE ERASE PROGRAMS AB

```
10 CLEAR :FOR A=0TO 100:LINE RND (160)-81,RND (88)-45,3;@(A)=XY:
NEXT A:XY=0:FOR A=0TO 100:B=@(A):LINE B,B÷256-(RM#0)x(B(0),3:NEX
T A:RUN

10 CLEAR :FOR A=0TO 100:LINE RND (160)-81,RND (88)-45,3;@(A)=XY:
NEXT A:XY=0:FOR A=0TO 100:B=@(A):LINE B,%(20005),3:NEXT A:RUN
```

IN THE FIRST ONE I BORROWED ANOTHER VARIABLE SO AS TO CUT 2 BYTES OFF OF THE SUGGESTED "÷256" METHOD I HINTED AT LAST MONTH.

IMPROVEMENTS ARE THE NAME OF THE GAME HERE. TRY USING THE KEYWORD "DEFAULT" IN PLACE OF "XY=0" IN THE EB VERSION PRINTED LAST MONTH. XY IS ZEROED ON A DEFAULT COMMAND IN EB, OR ON CLEAR IN AB. YOU MAY NOT BE ABLE TO USE THIS IN A PROGRAM THOUGH, FOR OBVIOUS REASONS. CLEAR SCREEN OR DEFAULT ALL 2 LETTER VARIABLES!

THE 2ND AB LINE ERASE USES VOL.5 PG.59. REMEMBER THAT EACH VARIABLE USES TWO ADDRESSES IN MEMORY. "B" USES %(20004) FOR THE LOW ORDER BYTE AND %(20005) [%(20004+1)] FOR THE HIGH ORDER BYTE. IF WE HAD USED A "Q" INSTEAD OF A "B", THE HIGH ORDER BYTE FALLS AT %(20035). IF ANY OF MY PROGRAMS PUZZLE YOU, DON'T HESITATE TO WRITE. A S.A.S.E. SPEEDS UP REPLYS.

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OVER THE LAST TWO MONTHS I'VE BEEN TALKING ABOUT DIFFERENT WAYS TO FILE SEARCH AND AUTO RUN. THE REASON IS THAT THERE ARE MANY WAYS OF TAPING PROGRAMS. WHY? LET'S SAY YOU HAVE A PROGRAM THAT WON'T FIT IN 1800 BYTES. USE EB? CAN'T SELL IT TO AB USERS. USE 2 PROGRAMS? WHY NOT? BECAUSE AB TAPES THE VARIABLES!! IF YOU WISH TO KEEP THE VARIABLES INTO THE SECOND PROGRAM YOU MUST USE:

CARRY OVER MEMORY

THERE ARE THREE METHODS OF HOLDING VARIABLES INTO ANOTHER PROGRAM. THE FIRST IS SEEN IN "HAUNTED HOUSE" [NEW IMMAGE], THE SECOND IN QUADRA (AB + BR 4K VERSIONS), AND THE ONLY PLACE YOU WILL SEE THE THIRD IS IN "SPACE MISSION", THIS MONTHS PROGRAM.

YOU MUST ENTER THE TEXT EXACTLY AS SHOWN IN THE LISTING OR PART 2 (NEXT MONTHS PROGRAM) WILL BLOW RIGHT OUT!! THE CARRY OVER IS IN THE CUSTOM CHIPS. LINES 710 AND 720 DO SOME PRETTY FANCY STUFF TO LOAD THE INTERCEPT FEEDBACK REGISTOR WITH 1 OF 2 POSSIBILITES FOR VARIABLE A. ONLY IF THE TEXT IS IN THE RIGHT PLACE IS INPUT PORT 8 (SEE PG.102 AB HANDBOOK) GOING TO GIVE THE RIGHT NUMBERS. THE CUSTOM CHIPS IS ONE PLACE TO HIDE A VARIABLE THAT YOU WISH TO PASS ALONG FROM ONE PROGRAM TO ANOTHER, BUT NOT A STRING, OR THE WHOLE SCRATCHPAD. HOW CAN WE CHANGE A PROGRAM TEXT AND KEEP THE SAME SCRATCHPAD (SCORES OR STRINGS)? SEE THIS COLUMN NEXT MONTH! (OR QUADRA, OR HAUNTED HOUSE) KEEP BUGGIN'!!!

BEFORE KEYING IN THIS MONTHS PROGRAM, TRY THIS:

```
ENTER>CALL3177
```

THE ARCADE STILL FUNCTIONS, BUT YOUR BASIC PROGRAM IS GONE FOREVER, (SEE ARCADIAN VOL.1 PG.31 AND 39). ALSO, RELOAD "SPACE MISSION [PART 1]", [HALT], AND RUN THIS LITTLE TEST:

```
ENTER>CLEAR :CY=16;TV=100;A=&(8):CLEAR :CY=16;TV=102;B=&(8):
CLEAR :PRINT A,B
```

THIS CHECKS THE INTERCEPT FEEDBACK NUMBER RETURNS.

```
IT SHOULD PRINT:      143     159
```

IF IT DOESN'T, YOU'VE GOT A MISTAKE IN KEYING IN THE FIRST HALF OF PART 1 TEXT, AND PART 2 WILL "CALL3177". (SEE LINE 10 OF THIS MONTHS PROGRAM). IF YOU CAN'T FIND THE BUG, WE CAN CHANGE "CARRY OVER" METHODS. CHANGE LINE 720 OF PART 1 TO READ:

```
720 %(20260)=A:FC=7
```

AND CHANGE LINE 10 OF PART 2 TO READ:

```
10 A=%(20260):IF ABS(A)#1CALL3177
```

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NOW LET'S SEE WHAT WE'VE DONE. %(20260) IS 2 BYTES INTO THE "STACK AREA", (PG.103 AB HANDBOOK). IF WE USE ":PRINT " WE DON'T TAPE THAT ADDRESS. SO OUR DATA HAS "CARRIED OVER". IN "QUADRA" I CARRIED A STRING IN "THE STACK" WITH THIS LOOP:

```
440FOR Q=0TO 12:%(Z+Qx2)=@(Q):NEXT Q:CLEAR :CX=-30:CY=0:
PRINT "START TAPE
```

Z=20264 IN THIS LOOP. THE SCORES ETC. ARE MOVED OUT INTO THE @(X) STRING FOR EACH PROGRAM. NOW YOU MAY SAY "WHY DO THAT WHEN YOU CAN USE THE "STOP SHORT" METHOD THAT HAUNTED HOUSE FROM [NEW IMMAGE] USES?" THAT METHOD WAS BETTER! SIMPLY TAPE THE FIRST PROGRAM NORMALLY, THEN TAPE THE OTHERS THAT FOLLOW A SPECIAL WAY SO AS NOT TO TAPE OVER THE VARIABLES! HAUNTED HOUSE WAS TAPED:

```
ENTER):PRINT %(-24576),904::PRINT %(20000),1
```

AS YOU PROBABLY GUESSED, THE TEXT AND "TXTUNF" (PG.103 AB HANDBOOK) WAS ALL THAT WAS TAPED. TO SAVE THE SCREEN ALSO, USE:

```
ENTER):PRINT %(16384),1809
```

THIS LEAVES THINGS WHERE THEY LIE. MEANING THAT NO LOOPS ARE REQUIRED HERE. BUT, IN QUADRA I WISHED TO END EACH PLAY SEGMENT BY PRINTING "REWIND TAPE AND PLAY BUT DON'T [RESET]". NOW IN THE FIRST PROGRAM, I WANTED TO USE "AUTO RUN". ALSO, ONE OF THE PLAY SEGMENTS USES THE LINE INPUT BUFFER TO SET &(9). I HAD TO TAPE OVER THE VARIABLES TO GET TO THE LINE INPUT BUFFER. (SEE PG.103 AB HANDBOOK). SO "TAPE SHORT" WAS OUT. AND I USED THE "MOVE IT OUT OF THE WAY" METHOD. BUT, WHY NOT USE "TAPE SHORT" IN "SPACE MISSION"? BECAUSE, A CHECK SUM BYTE GOES TO TAPE AND INPUTS AT THE END OF EVERY TAPE LOAD, (FOR THE :LIST FUNCTION). IT APPEARS AS GARBAGE IN THE ADDRESS FOLLOWING AN INPUT. ALSO, THE TXTUNF MUST BE TAPED OR STRANGE THINGS OCCUR. (MORE ON THAT NEXT YEAR). SO THE VARIABLE "A" MUST BE MOVED TO BE KEPT. ALSO, THIS IS WHY WE USE VARIABLE "Y" TO "FILE SEARCH" WITH, INSTEAD OF "Z". "BC" FOLLOWS, AND WE WOULD LOSE OUR COLOR WITH EVERY TEST PASS. (SEE VOL.5 PG.59 ARCADIAN) (REMEMBER THAT %(20000)=TXTUNF).

NOW, YOU MAY BE WONDERING WHERE I PUT MY "CHRDIS" ROUTINE (VOL.5 PG.14,15,37,AND 72 ARCADIAN) FOR MY CHARACTERS. IF I USED THE STACK TO CARRY OVER MEMORY. WELL, NEXT YEAR I'LL TALK ABOUT THAT WHEN I DISCUSS "TIME SHARING, THE USE OF USED MEMORY". ALSO WE'LL GET INTO "THINGS CALLED STRINGS" AND LOOK AT ALL FIVE WAYS TO RUN MULTIPLE ARRAYS!! (THEY CAN ALL BE DONE IN AB). I'LL TELL YOU WHAT I FOUND INSIDE "THE GREAT AMERICAN JIGSAW" [ESOTERICA LTD.]. BUT FIRST, I WANT TO TALK ON SOUND. THERE ARE TWO WAYS TO ACCESS THE SOUND IN THE BALLY, DIRECT AND INDIRECT. THESE ARE

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ALL WRITTEN UP IN THE ARCADIAN VOL.1 PG.62-66 FOR DIRECT, AND PG.71-73 FOR INDIRECT. NOW, I'M NOT GOING BACK OVER ALL THAT. I AM GOING TO SHOW THE DIFFERENCES FROM VOL. 1 (OLD BB) AND AB. IF HOWEVER, YOU HAVE EB, THE TUTORIAL APPLIES TO YOU 100%!! YOU MAY CONSIDER PURCHASING "THE PORT TO VARIABLE TRANSLATOR" BY [GEORGE MOSES]. IT CONVERTS AB TO BB, OR EB!! FINALLY, YOU MAY WISH TO REMOVE THE "&(16)=71" FROM LINE 20 OF SPACE MISSION PART 2 AND HEAR WHAT HAPPENS! NEXT YEAR I'LL EXPLAIN "MO SHIFT, A KILLER"!!

FOR RIGHT NOW, HOWEVER, LET'S LOOK AT THESE LOOPS:

LOOP 1

```
10 NEXT A
20 PRINT "IT WORKS"!!
30 FOR A = 1 TO 100
40 RUN
```

LOOP 2

```
10 FOR A = 1 TO 100 STEP RND (10)
20 PRINT A
30 IF TR(1) RUN
40 NEXT A
```

ENTER "GOTO 30" TO START LOOP 1. "RUN" STARTS LOOP 2. TRIGGER (1) CHANGES THE 'STEP' VALUE IN LOOP 2. HOW? SEE PAST (OR FUTURE) EPISODES OF THIS COLUMN.

SOCCER Overview by Herb Matthews. Yeah! for Soccer!! For me, this cartridge for the Astrocade is one of the most refined games available for our systems. I was able to secure a copy through ABC Hobbycraft, and boy am I glad!

Check this partial list of options that are available: PLAYERS(1-4) with 1 or 2 players teaming against the computer or an equal number of human players; play boundaries; difficulty level (when vs. the computer); ball direction (in 45 steps over a range of 0 , 90 , 180 , or 360); and more. These options can have a significant effect on the style and intensity of play. Soccer offers a lot more control than 'foosball'. Within zones, the players can 'dribble' the ball, and pass at angles, even while evading other players. An on-screen time display lets you know the playing time available. Sound effect include a satisfying 'kick' sound, and a brief crowd cheer at each scoring.

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```
  1 .
  2 . EX.BASIC ONLY
  3 .
  4 .SNAP & SHOW DESIGN GENERATOR
  5 .              BY
  6 .     DIETER HEINERMANN
  7 .
  8 .
  9 .SET 1 LETTER VARIABLES TO Ø
 10 ZERO
 15 .COLD START     GOTO CHECK SCREEN
 20 GOTO 160
 25 .WARM START
 30 CLEAR
 35 .PICK RND STARTING LOCATION
 40 X=RND (140)-71
 50 Y=RND (80)-43
 55 .A & B =INITIAL SPEED
 60 A=1:B=1
 65 .T=TIMER
 70 FOR T=ØTO 555
 75 .MAIN LOGIC & BOUNDRY CHECK
 80 C=X+(A*E):IF (C<-74)+(C>74)A=-A
 90 D=Y+(B*F):IF (D<-41)+(D>41)B=-B
100 X=C:Y=D
105 .DISPLAY WHAT WE HAVE IN 4 SECTIONS OF SCREEN
110 SHOW X,Y,2,Ø(1)
120 SHOW -X,-Y,2,Ø(1)
130 SHOW X,-Y,2,Ø(1)
140 SHOW -X,Y,2,Ø(1)
150 NEXT T
155 .START     SET NEW RND SPEED FOR X & Y
160 E=RND (4):F=RND (3)
165 .CHECK SCREEN  IF PIXEL Ø,Ø 3,3 6,6 =Ø GOSUB NEW BOX
170 IF (PX(Ø,Ø))+(PX(3,3))+(PX(6,6))=ØGOSUB 200
175 .IF PIXEL Ø,Ø OR 3,3 OR 6,6 >Ø SNAP 12,12 PIXELS FROM CENTER OF SCREEN
180 SNAP Ø,Ø,12,12,Ø(1)
185 .GOTO WARM START
190 GOTO 30
195 .NEW BOX
200 CLEAR
210 BOX Ø,Ø,12,12,7:BOX Ø,Ø,10,10,6:BOX Ø,Ø,8,8,5
220 BOX Ø,Ø,6,6,3:BOX Ø,Ø,4,4,2:BOX Ø,Ø,2,2,1
230 RETURN
```

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```
 10 CLEAR ;Z=10;K=20;FC=252;BC=119;&(9)=255;CX=-30;CY=K;PRINT "CLAIM JUMPING
 20 CX=-45;CY=-Z;INPUT "NUMBER OF PLAYERS "C;IF (C>4)+(C<2)GOTO K
 30 CLEAR ;D=0;E=0;F=0;G=0;@=0;P=1;N=90;S=370;R=420;T=470;U=480
 40 FOR A=-69TO 71STEP K
 50 FOR B=-39TO 41STEP K
 60 BOX A,B,2,2,1;MU=90
 70 NEXT B;NEXT A
 80 X=1;Y=1;GOTO 360
 90 V=X;W=Y;H=0;J=15+P
100 IF &(J)=1Y=Y+K
110 IF &(J)=2Y=Y-K
120 IF &(J)=4X=X-K
130 IF &(J)=5Y=Y+Z;X=X-Z
140 IF &(J)=6Y=Y-Z;X=X-Z
150 IF &(J)=8X=X+K
160 IF &(J)=9Y=Y+Z;X=X+Z
170 IF &(J)=10Y=Y-Z;X=X+Z
180 BOX V,W,2,2,2;IF (V#X)+(W#Y)MU=83
190 IF (X<-69)+(X>71)+(Y<-39)+(Y>41)GOTO 80
200 BOX X,Y,2,2,1;FOR A=1TO 30
210 IF TR(P)L=X;M=Y;GOTO 230
220 NEXT A;GOTO N
230 A=(Y+39)c20;IF RM GOTO 260
240 IF PX(X+2,Y)=0BOX X,Y,K,2,1;MU=84;GOTO 280
250 GOTO N
260 IF PX(X,Y+2)=0BOX X,Y,2,K,1;MU=68;GOTO 310
270 GOTO N
280 IF PX(X+Z,Y+2)IF PX(X-Z,Y+2)IF PX(X+2,Y+K)M=Y+Z;GOSUB R
290 IF PX(X+Z,Y-2)IF PX(X-Z,Y-2)IF PX(X+2,Y-K)M=Y-Z;GOSUB R
300 GOTO 330
310 IF PX(X-K,Y+2)IF PX(X-2,Y+Z)IF PX(X-2,Y-Z)L=X-Z;GOSUB R
320 IF PX(X+K,Y+2)IF PX(X+2,Y+Z)IF PX(X+2,Y-Z)L=X+Z;GOSUB R
330 IF @=28GOTO 500
340 IF H=1GOTO N
350 P=P+1;IF P>C P=1
360 CX=-74;CY=1;TV=P+48;GOTO N
370 MU=77;MU=78;GOSUB PbZ+370;H=1;Q=Q+1;RETURN
380 D=D+1;@(1)=D;RETURN
390 E=E+1;@(2)=E;RETURN
400 F=F+1;@(3)=F;RETURN
410 G=G+1;@(4)=G;RETURN
420 BOX L,M,14,14,1;GOSUB PbZ+420;GOSUB S;RETURN
430 GOSUB T;RETURN
440 GOSUB U;RETURN
450 GOSUB T;GOSUB U;RETURN
460 GOSUB U;GOSUB 490;RETURN
470 BOX L,M,2,2,2;RETURN
480 BOX L-4,M+4,2,2,2;BOX L+4,M-4,2,2,2;RETURN
490 BOX L-4,M-4,2,2,2;BOX L+4,M+4,2,2,2;RETURN
500 I=Z;FOR A=KTO 1STEP -1
510 FOR B=1TO C;IF @(B)=A@(I)=B;I=I+Z
520 NEXT B;NEXT A
530 CY=25;FOR A=ZTO CbZ STEP Z;CX=-55;GOSUB A+590;GOSUB @(A)bZ+530;CY=CY-6;NEXT
A;GOTO 580
540 PRINT "#1 SCORED",#3,D," ";RETURN
550 PRINT "#2 SCORED",#3,E," ";RETURN
560 PRINT "#3 SCORED",#3,F," ";RETURN
570 PRINT "#4 SCORED",#3,G," ";RETURN
580 FOR A=1TO C;IF TR(A)GOTO Z
590 NEXT A;GOTO 580
600 PRINT " 1ST - ",;RETURN
610 PRINT " 2ND - ",;RETURN
620 PRINT " 3RD - ",;RETURN
630 PRINT " 4TH - ",;RETURN
```

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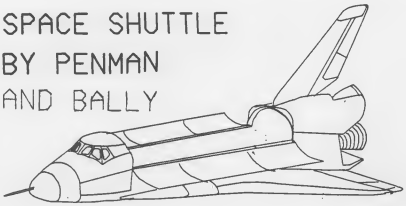
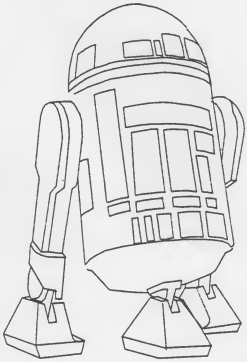
SPACE SHUTTLE BY PENMAN AND BALLY



ROBOT

BY PENMAN AND BALLY



The "PLOTTER DRIVE PROGRAM" is a listing that will draw DATA to the TV screen or to a PENMAN three color pen plotter. These reduced pictures are the results of the two sets of data that have been put into memory so far. The original picture plots are full size on a sheet of paper with the captions in two or three different colors.

As my program states in line #10, the program at present takes 1719 bytes of the BLUE RAM lower program area and the 4400 bytes of DATA is stored in the upper section beginning at !8001.

The PENMAN is RS232C serial input and operates nicely through the old Bally tape interface with printer jack addition.

Input of DATA requires knowing the X, Y plot points and using "GRAPHICS PLOT MENU #1. INPUT NEW DATA." to put them into memory locations.

I will at a later date keep all interested ARCADIAN readers updated as to how to input DATA using the PENMAN as a "mouse". The plotting time required by the PENMAN is 10 to 12 minutes for each picture. The plotting time to the TV is only a minute or so.

Any interested Arcadians reader can send me a tape with a self-addressed, stamped return envelope, and I will put the program and data on it.

LeRoy G. Flamm
306 Sycamore Rd.
Mohnton, PA, 19540

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PLOTTER DRIVE PROGRAM

```
00001 CC=6;CX=-50;CY=10;CF=L.;print "INPUTTING_DATA";:input %(!8001)
00002 clear ;CC=6;CF=L.;CY=37;print "____GRAPHICS_PLOT_MENU";CF=SM.;CY=19;CC=7;C
L=-58;print "1._input NEW_DATA";print "2._RECORD_PROGRAM_&_DATA_to TAPE";print "
3._PLOT_DATA
00003 print ;CC=5;input "SELECT"A;CL=-79;CC=7;if (A=1)+(A=2)goto A*100
00004 clear ;CC=6;CF=L.;CY=37;print "____PLOT_PROGRAMS_MENU";CC=7;CF=SM.;CY=19;C
L=-58;print "1._SPACE_SHUTTLE";print "2._ROBOT
00006 print ;CC=5;input "SELECT"X;print ;CC=7;print "PLOT_to TV(1),SERIAL_PLOTTE
R(2)";print ;CC=5;input "SELECT"Y;CC=7;CL=-79;goto 10*Y+X
00007 :return ;print "PUT_IN_COLOR_PENS__1-G_2-B_3-R._HIT_GO.";if KP*print ;retu
rn
00008 CC=5;print "BY_PENMAN";CC=7;print "AND_BALLY";CL=-79;print ;CF=SM.;CY=49;N
T=1;print "KP=MENU";if KPgoto 2
00009 print "U_A_M_2500,1838,";:return ;NT=1;goto 2
00010 .JUNE,1985__LEROY_G._FLAMM__SZ=1381__DATA_LENGTH=4400_BYTES
00011 S=-32767;E=-30351;gosub 300;CC=6;CF=L.;CL=-65;print ;CY=35;print "SPACE_SH
UTTLE";goto 8
00012 S=-30349;E=-28369;gosub 300;CC=6;CF=L.;CL=27;print ;CY=48;print "ROBOT";go
to 8
00021 S=-32767;E=-30351;gosub 400;gosub 7;goto 31
00022 S=-30349;E=-28369;gosub 400;gosub 7;goto 35
00031 print "U_A_M_100,1600,P1,Q0,S12,LSPACE_SHUTTLE__";;TV=10
00032 TV=13;print "P3,LBY_PENMAN__";;TV=10
00033 TV=13;print "P2,LAND_BALLY__"
00034 goto 9
00035 print "U_A_M_2500,1350,P1,Q3,S12,LR_O_B_O_T___"
00036 print "U_A_M_2375,1400,P3,S6,LBY_PENMAN_AND_BALLY"
00037 goto 9
00100 if F=05=!8001;goto 110
00105 S=F+2
00110 A=S;print "input 9999_to TERMINATE_DATA_input
00120 print #1,A,"=",;input B;if B=9999E=A;%(A)=B;F=A;k=(F+32767)/2+1;goto 140
00130 %(A)=B;A=A+2;goto 120
00140 print #1,"ADD_NEW_PROGRAM_NAME_to LINE_NO._4__AND_ADD_NEW_LINES__1?_AND_2?
_WITH_FOLLOWING_S=",S,"__E=",E;print "USE__goto 2__to RECORD_to TAPE.";print ;li
st 4,1;STOP
00200 CC=5;print "START_TAPE._HIT_GO.";if KPCC=6;Print "RECORDING
00210 :print ;for A=1to 500;next A;:print %(!8001),K;goto 2
00300 clear ;NT=0;for I=Sto Estep 4;if %(I)=9999return
00310 if %(I))3000line (%(I)-3000)/16-78,%(I+2)/16-58,0;next I
00320 line %(I)/16-78,%(I+2)/16-58,7;next I
00400 clear ;NT=0;*print
00410 print "I_C$11,$18"
00420 print "B_W1,P2,"
00430 for I=Sto Estep 4;if %(I)=9999return
00440 if %(I))3000print #1,"U_A_M_",%(I)-3000,",",%(I+2),",";next I
00450 Print #1,"D_A_M_",%(I),",",%(I+2),".";next I
```


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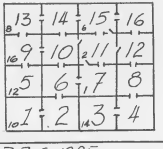
```
LOWERCASE = 1-BYTE KEYPAD WORDS. UNDERSCORES
 = SPACES.     1313 CHARACTERS

5  T=0:O=4:V=(rnd (2)-1)x600+120:W=(rnd (2)-1
)x200:goto 200
35  clear :box 0,0,150,80,1:return
50  VA=15:box X+2,Y+2,2,2,3:@(M)=S:S=S+1
51  if VB<>0 for MO=1to Rstep 2:box X+2,Y+2,MO,MO
,3:next MO:S=R
52  for MO=-Rto U:next MO:VA=3:return
60  BC=-2:L=0:gosub R:for F=-27to Rstep 18:fo
r E=-55to 60step 36
68  L=L+1:box E,F,R,17,2:if @(L)=0CY=F:CX=E:p
rint #0,L,
69  next E:next F
70  G=V:A=-105:H=W:A=-34:box G,H,3,3,1:box G,H,
1,1,2
75  box A:A=-105,B:A=-34,2,2,1
77  for E=1to 900:next E:if SK<>17gosub 100
78  return
100  VB=0:T=160:M=Dx4+C
105  BC=Mx16-1:gosub R:box 0,0,140,U,2
106  if @(M)=0box 2,2,2,2,1
120  L=Mx12-12:for Z=Lto L+10step 2
130  G=*(Z):I=00:I=ABS(RM):H=*(Z+1)>100:J=ABS(
RM)
140  box G,H,I,J,3:next Z:L=0:Z=1:if M=11:CX=
37:CY=30:print #0,O-3,
145  VR=Mx3:if VA=1H=-1:I=1:gosub 610
150  TA=R:box X+2,Y+2,5,5,1:VA=3:return
200  A=490:B=165:M=11:gosub 640
205  for Z=1to 16:@(Z)=0:next Z:gosub 100
210  for S=1to 16step 0:if TR(1)<>F N=Mgosub 6
0
216  V=V+(A>V)xO-rnd (L):W=W+(B>W)xO-rnd (L):
E=V+140:G=RM-U:F=W+U:H=RM-R:N=Fx4+E:if N=Mbox
 G,H,7,7,3:VB=9:VA=9
217  VF=(N<>M)+2:if &(16)=0goto 242
225  box X+2,Y+2,5,5,3:P=JX(1)x5:Q=JY(1)x5:if
 PX(X+P,Y)=BA=A+P:C=A+140:X=RM-U
227  if PX(A,Y+Q)=BB=B+Q:D=B+70:Y=RM-R
232  box X+2,Y+2,5,5,3:if A=*(M+192):if B=*(M+
208)gosub 600
240  if Dx4+C=Mgosub 100
242  if PX(X+2,Y+2)=0gosub 50
250  next S:W
261  gosub 60:for A=1to 16:T=T+@(A)xA:next A:
T=T+4
265  box -1,0,71,R,2:CY=9:CX=-28
266  if S=17print "Y0U_DID_IT":O=O+1:goto 268
267  CX=-19:print "THE_END
268  CY=-7:CX=-28:print "SC0RE_";#4,T,:box -1
,0,71,35,3:if S=17gosub 77:goto 200
270  if TR(1)run
280  goto 270
600  A=*(M+193):B=*(M+209):H=1:I=2:VA=13
610  VF=0:for G=0to R:if G+5<>F RM>2VA=VA-H
620  box X+rnd (4),Y+rnd (4),2,2,I:TA=RM+9:ne
xt G
640  C=A:r140:X=RM-U:D=B:U:Y=RM-R:return
```



HOW TO PLAY OUTPOST 19

You are stranded on an alien outpost with nobody to help you. While you wait and pray for a rescue party the only hope you have of surviving is to gather the food parcels that exist in each of the 16 rooms of the outpost. A pull of the trigger will show you a full screen map of the outpost. The rooms with food parcels stashed will have room numbers. After you pick up a room's food parcel that room will appear on the map as a blank room.

While you're chasing after the food parcels the alien is chasing after you!!! His advantage is that he can go through walls. So his path toward you is more of a straight line, while your escape must be around obstacles in the rooms and through doorways provided. But you have a couple of aces in the hole. (1) You have the trigger-pull top-view map which also shows you which room the monster is in and where you are. (2) You have a transporter in each of the odd-numbered rooms!!! They're usually in the lower parts of the room. After you've played a few games you'll remember where they all are.

To become familiar with the workings of the transporters look at the room map in this issue. The large numbers are the numbers of the rooms containing them. The small numbers are the numbers of the room you will transport to. Example: if you are in room 13 and just as the alien monster is ready to pounce you nonchalantly step into the transporter. Poof!!! You'll find yourself in room 8. That's clear across the outpost and you've bought some time to hunt up some more food parcels before he can catch up to you!

HOW TO DIE: There are two ways you can get killed. (1) The monster touches you. (2) You try to grab a food parcel while the monster is in the same room. (Use your trigger map to see if he's coming before you grab the parcel). If you die, pull the trigger and start a new game.

This is one of the best Astro-Basic programs I've ever seen! And the only one that surpasses this is a Blue Ram Basic version Mike did. It fills a 16K Blue Ram and has fantastic graphics, action and constant music. If you're interested we can print it in a future Arcadian. Unfortunately, Mike Feace has packed his Bally Arcade away in a box somewhere and is presently programming on a (gasp, choke) Commodore-64. But, he gave us permission to print this program and some other previously unreleased tapes we'll print in the future.

George Moses

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*() ARRAYS

*(0)=7205
*(1)=215
*(2)=-4355
*(3)=245
*(4)=-4845
*(5)=225
*(6)=-4815
*(7)=-1305
*(8)=-4615
*(9)=-1805
*(10)=3765
*(11)=-805
*(12)=-7305
*(13)=215
*(14)=225
*(15)=3705
*(16)=-1815
*(17)=755
*(18)=-4815
*(19)=-855
*(20)=4255
*(21)=-855
*(22)=4255
*(23)=2715
*(24)=255
*(25)=-855
*(26)=235
*(27)=-835
*(28)=7205
*(29)=215
*(30)=-1805
*(31)=-1315
*(32)=-2305
*(33)=-815
*(34)=205
*(35)=1205
*(36)=-7205
*(37)=215
*(38)=215
*(39)=3705
*(40)=1725
*(41)=-1325
*(42)=1225
*(43)=1725
*(44)=-1825
*(45)=1225
*(46)=-1325
*(47)=-1825
*(48)=235
*(49)=3705
*(50)=-2635
*(51)=235
*(52)=3235
*(53)=235
*(54)=-1305
*(55)=-3305
*(56)=205
*(57)=-1305
*(58)=1705
*(59)=-3305
*(60)=225
*(61)=-3805
*(62)=225
*(63)=3705
*(64)=7205
*(65)=215
*(66)=1705
*(67)=-855
*(68)=-1305
*(69)=-855
*(70)=4205
*(71)=-755
*(72)=-7305
*(73)=225
*(74)=-3365
*(75)=1205
*(76)=-3305
*(77)=-805
*(78)=225
*(79)=3705
*(80)=5725
*(81)=205
*(82)=3705
*(83)=205
*(84)=215
*(85)=5725
*(86)=215
*(87)=-3805
*(88)=245
*(89)=245
*(90)=245
*(91)=205
*(92)=205
*(93)=245
*(94)=205
*(95)=205
*(96)=225
*(97)=3705
*(98)=225
*(99)=-3805
*(100)=7205
*(101)=225
*(102)=-4355
*(103)=265
*(104)=-4355
*(105)=-3305
*(106)=5235
*(107)=235
*(108)=-7305
*(109)=215
*(110)=215
*(111)=-3805
*(112)=215
*(113)=3705
*(114)=275
*(115)=-345
*(116)=265
*(117)=-335
*(118)=3705
*(119)=-305
*(120)=-7305
*(121)=2715
*(122)=7205
*(123)=-2815
*(124)=-6315
*(125)=-3805
*(126)=6215
*(127)=3705
*(128)=3735
*(129)=1735
*(130)=-3835
*(131)=-1835
*(132)=-4355
*(133)=1245
*(134)=4255
*(135)=-1345
*(136)=225
*(137)=-3805
*(138)=225
*(139)=3705
*(140)=5725
*(141)=2225
*(142)=4205
*(143)=215
*(144)=215
*(145)=-3805
*(146)=7205
*(147)=215
*(148)=-4355
*(149)=755
*(150)=-4335
*(151)=735
*(152)=-4305
*(153)=-335
*(154)=-4325
*(155)=225
*(156)=-7305
*(157)=215
*(158)=7205
*(159)=215
*(160)=215
*(161)=-3805
*(162)=2715
*(163)=-1345
*(164)=-2815
*(165)=1735
*(166)=-2805
*(167)=715
*(168)=225
*(169)=-3605
*(170)=-7305
*(171)=215
*(172)=7205
*(173)=215
*(174)=275
*(175)=1245
*(176)=265
*(177)=1235
*(178)=3705
*(179)=1215
*(180)=-7305
*(181)=215
*(182)=215
*(183)=-3805
*(184)=-2335
*(185)=235
*(186)=2735
*(187)=235
*(188)=1715
*(189)=-805
*(190)=-1315
*(191)=-805
*(192)=-7305
*(193)=140
*(194)=320
*(195)=490
*(196)=320
*(197)=215
*(198)=670
*(199)=520
*(200)=140
*(201)=195
*(202)=620
*(203)=440
*(204)=360
*(205)=150
*(206)=645
*(207)=460
*(208)=280
*(209)=25
*(210)=195
*(211)=45
*(212)=255
*(213)=70
*(214)=170
*(215)=105
*(216)=60
*(217)=205
*(218)=235
*(219)=175
*(220)=0
*(221)=235
*(222)=105
*(223)=240
*(224)=70
*(225)=0
*(226)=-1
*(227)=-1

WAVEMAKERS
OUTPOST 19
(c) Mike Peace, 1983
in Astro-Basic

This is a previously unreleased Astro-Basic program from Mike Peace and it's fantastic! This is like finding the lost Honeymooners tapes! After you type in the text part of the program save it on tape before you start keying the 228 values into the *() string array. Don't reset the computer! Just use this little routine to help you enter the star array. Just enter the following without a line number:

```
CLEAR: FOR A=0 TO 227: PRINT #1, "*(" ;A, ")
=" ;INPUT " " *(A): NEXT A
```

As soon as you press GO, the screen will clear and you will be prompted for each of the 228 values. Consult the chart provided with this listing and enter the values asked for. Be sure to enter any negative numbers with minus signs! When you've entered the last value into location *(227) the prompts will stop and you must then save the entire program to tape with the ;PRINT command.

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VAN-GAM

BY BOB WEBER

```
LOWERCASE = 1-BYTE KEYPAD WORDS, UNDERSCORES
 = SPACES.      1596 CHARACTERS

10  S=0:U=0
20  clear :BC=rnd (32)*8:FC=BC+4
30  for Z=0to 49:@(Zx2)=Zx2&2+100:@(Zx2+1)=Zx
2&2+100:next Z
40  T=0:input "PILE_SIZES?_L"L,R
41  if L+R=0goto 40
45  print #11,L,"-LEFT".#4,R,"-RIGHT
50  if L+R>5goto 60
70  print "YOU_RE_A_REAL_SPORT'
80  print "DO_YOU_WANT_TO_GO_FIRST?
90  F=KP:if K=78goto 690
100 if L=Rgosub 1200
110 if ABS(L-R)=1gosub 1200
120 print "YOUR_MOVE:____",
130 I=KP:TV=I:J=KP:TV=J:if J<65K=KP:TV=K
140 if I>48if I<58goto 170
150 print :T=T+1:if T>2print "ALRIGHT,_THAT'
S_IT":print "I_QUIT":STOP
160 print "IMPROPER_ENTRY!":goto 120
170 I=I-48:if J<65I=Ix10+(J-48):J=»
175 if J=7agoto 180
176 if J=82goto 182
177 if J=66goto 184
178 goto 150
180 if I<Lgoto 150
181 L=L-1:goto 220
182 if I>Rgoto 150
183 R=R-1:goto 220
184 if I Lgoto 150
185 if I<Rgoto 150
186 L=L-1:goto 182
210 goto 150
220 gosub 1150
600 if L+R>0goto 680
670 print "YOU_WIN'!":S=S+1:goto 1160
680 print "HM.·.",
690 Z=0:M=0
700 if @(Z)=Lgoto 760
710 if @(Z+1)=Lgoto 780
720 if @(Z)=Rgoto 800
730 if @(Z+1)=Rgoto 820
740 Z=Z+2:if Z>99print "I_DON'T_KNOW":goto
1060
750 goto 700
760 A=Z:B=1:if M=1goto 840
770 M=1:goto 720
780 A=Z:B=0:if M=1goto 840
790 M=1:goto 720
800 C=Z:D=1:if M=1goto 840
810 M=1:goto 740
820 C=Z:D=0:if M=1goto 840
830 M=1:goto 740
840 if L=Rgoto 895
845 if C=Agoto 1060
850 if A>Cgoto 900
860 F=A+B
870 if @(F)>Rgoto 940
890 M=R-@(F):K=@(F):E=82:goto 1110
895 M=L:L=0:R=0:E=66:goto 1110
```

```
                VAN GAM
              BY BOB WEBER
            in Astro-Basic

     DIRECTIONS:

     Entries are made via the keypad with
overlay. The game starts with 2 piles of
matches, which you input from the keypad. Up
to 99 matches in each pile. The object is to
take the last match. You may take any number
of matches from either pile, or the same
number from both.

     Example:

6R  takes 6 matches from the right pile.
8L  takes 8 matches from the left pile.
5B takes 5 matches from both piles.

     Answer questions with Y for yes and N
for no for number 1 player.
```

```
900  P=C+D
920  if @(P)>Lgoto 940
930  M=L-@(P):L=@(P):E=76:goto 1110
940  M=@:E=66
950  P=A:if C<A P=C
960  P=P-2:G=0
965  M=M+1:L=L-1:R=R-1
970  for Z=P to 0step -2
990  if @(Z)=Lgoto 1040
1000 if @(Z+1)=Lgoto 1050
1010 if @(Z)=Rgoto 1060
1020 if @(Z+1)=Rgoto 1070
1030 next Z:goto 965
1040 if @(Z+1)=Rgoto 1110
1045 goto 1075
1050 if @(Z)=Rgoto 1110
1055 goto 1075
1060 if @(Z+1)=Lgoto 1110
1065 goto 1075
1070 if @(Z)=Lgoto 1110
1075 if G=1goto 960
1077 G=1:goto 965
1080 if L>Rgoto 1100
1090 R=R-1:M=1:E=82:goto 1110
1100 L=L-1:M=1:E=76
1110 print "_1_TAKE:".#3,M,:TV=E
1115 gosub 1150
1120 if L+R>0goto 120
1130 print "I_WIN'!":U=U+1:goto 1160
1150 print :print "LEAVING",#4,L,"-LEFT",R,"
-RIGHT":return
1160  print "COMPUTER_=_".#1,U."____HUMAN_=_"
,S
1170  print "DO_YOU_WANT_TO_PLAY_AGAIN?"
1180  K=KP:if K=89goto 20
1190  T=2:goto 150
1200  print "YOU_LIKE_SITTING_DUCKS,___DON'T_
YOU?":return
```

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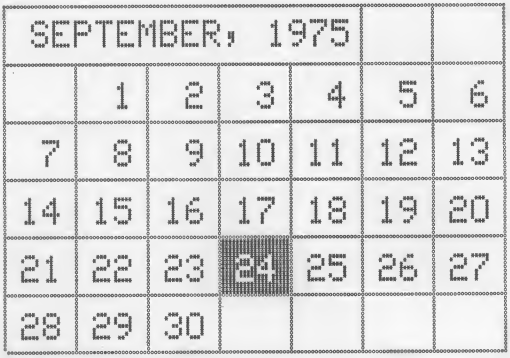


```
 10 BC=7;FC=251;E=1;B=1;NT=0;CLEAR
 11 PRINT ;PRINT "     CALENDAR PROGRAM
 12 PRINT ;PRINT "  ENTER A MONTH, DAY, AND   YEAR, AND I'LL DRAW  YOU  A CALENDAR!
 14 PRINT "     FORMAT: (12 3 1945)
 15 INPUT "  ENTER MONTH #:",M
 16 INPUT "  ENTER DAY #:",D
 17 INPUT "  ENTER YEAR #:",Y;GOTO 270
100 .THESE TELL THE COMPUTER THE MONTH NAMES AND LENGTH
101 PRINT "JANUARY, ";:L=31;RETURN
102 PRINT "FEBRUARY, ";:L=28+(Y=Yc4b4)-(Y=Yc100b100);RETURN
103 PRINT "MARCH, ";:L=31;RETURN
104 PRINT "APRIL, ";:L=30;RETURN
105 PRINT "MAY, ";:L=31;RETURN
106 PRINT "JUNE, ";:L=30;RETURN
107 PRINT "JULY, ";:L=31;RETURN
108 PRINT "AUGUST, ";:L=31;RETURN
109 PRINT "SEPTEMBER, ";:L=30;RETURN
110 PRINT "OCTOBER, ";:L=31;RETURN
111 PRINT "NOVEMBER, ";:L=30;RETURN
112 PRINT "DECEMBER, ";:L=31;RETURN
260 .THESE LINES COMPUTE WHICH WEEKDAY THE 1ST FALLS ON.
270 IF (M<I)+(M=12)GOTO 15
280 IF (D<I)+(D>31)+(Y<1801)+(Y>2399)GOTO 15
290 IF M<3 Y=Y-1;M=M+12
300 F=(Yb5)c4-(Y<1900)-(Y>2000)b(Y-2000)c100+((M-2)b259)c100;.FIRST COMES ON THIS WEEKDAY
310 W=F+D-(F+D-1)b7;.
320 F=F-(Fc7)b7+1
330 IF M>12M=M-12;Y=Y+1
350 CLEAR ;.THESE LINES DRAW THE CALENDAR.
360 FOR A=-70TO 70STEP 20;BOX A,0,1,78,1;NEXT A
370 FOR A=-39TO 39STEP 13;BOX 0,A,140,1,1;NEXT A
380 BOX -20,33,99,12,2
390 CX=-60;CY=32;GOSUB 100+M;PRINT #0,Y
400 FOR CY=32TO -40STEP -13;FOR CX=-63TO 65STEP 8
401 IF E=1IF F>5CX=-83+(Fb20)
402 IF E=1IF F<6CY=19;CX=-83+(Fb20)
409 IF E=D X=CX;Y=CY
410 IF E<10CX=CX+6
420 IF E<=LPRINT #0,E,;E=E+1
425 IF E>L CX=CX+6;TV=32
430 NEXT CX;NEXT CY
440 FOR A=1TO 11;BOX X+3,Y+1,19,12,3;FOR D=1TO 400;NEXT D;NEXT A
555 IF KPRUN
```

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ADS:

WANTED TO BUY: Copies of electronic schematics for the Datamax UV-1 computer or similar system (excluding Datamax UV-1R computer) which utilizes Bally's 3 custom address, data and I/O chips. I am attempting to provide myself and other Bally/Astrocade users the option of writing programs on a Bally high resolution map (320 x 204 pixels). Contact Mike Matte, 8605 W. Douglas Ave., Milwaukee, Wi. 53225, (414) 353-5099.

WANTED TO BUY: used Blue Ram Memory Add-on unit, at reasonable rate, such as $100. Contact Bruce Brigden, 401 E. Main, Beloit, Kansas 67420 (913)-738-5881

PROGRAMS MARKED "EB", "BRB", "Extended Basic", "Blue Ram Basic" will NOT operate in AstroBasic, but need extra memory and an enhanced Basic.

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3	X =							
4	X =							
5	X =							

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ART - DESIGN		
TYPE		
TYPEWRITER		
OTHER		
TOTAL		

PHOTOGRAPHIC

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STAT		
HALFTONE		
SCREEN		
REVERSE		
TOTAL		

INKS

ITEM #
1st COLOR: black
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3rd COLOR:

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- CUTTING
- STAPLING
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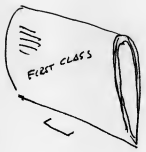

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